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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/691,047	10/22/2003	Herbert J. Erhardt	86065PCW	6114

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Thomas H. Close
Patent Legal Staff
Eastman Kodak Company
343 State Street
Rochester, NY 14650-2201

EXAMINER

SELBY, GEVELL V

ART UNIT	PAPER NUMBER
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2622

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/25/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/691,047	Applicant(s) ERHARDT ET AL.	
	Examiner Gevell Selby	Art Unit 2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 22 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION***Drawings***

1. The drawings are objected to because the lines and texts of the drawing are not of a uniform size and width. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-6, 8, and 10-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Kameyama, US 5,416,516.

In regard to claim 1, Kameyama, US 5,416,516, discloses an image sensor comprising:

(a) a plurality of photosensitive sites (see figure 2a, photosensitive region) which convert incident light into a charge for forming a bounded array of active imaging pixels (see column 2, lines 60-68); and

(b) one or more substitutional pixels sites (see figure 2a, transfer region and defective pixels) arranged in predetermined locations and interspersed amongst the boundary of the array of active imaging pixels;

wherein the substitutional pixels are of a different design from the active imaging pixels which substitutional pixels provides data, information or function different from the active imaging pixels for improving performance, operation, manufacture, and/or assembly of the image sensor (see column 2, lines 60-68: the vertical transfer registers are of a different design than the imaging pixels by being shielded and used to transfer image data to the horizontal register and the defective pixels are different in that they are completely white of black).

In regard to claim 2, Kameyama, US 5,416,516, discloses the image sensor as in claim 1, wherein the substitutional pixels are amplifier circuits or buffer circuits for improving distribution of current or voltage across the array of pixels (see figure 2A and column 2, lines 60-68: vertical transfer region moves the image signals along the array of pixel).

In regard to claim 3, Kameyama, US 5,416,516, discloses the image sensor as in claim 1, wherein the substitutional pixels are amplifier circuits or buffer circuits for improving signal integrity within or across the array of pixels (see figure 1A and column 2, lines 60-68: vertical transfer region improves the signal integrity by maintaining the signal values while transferring to the horizontal register).

In regard to claim 4, Kameyama, US 5,416,516, discloses the image sensor as in claim 1, wherein the substitutional pixels have response characteristics for determining alternate image parameters including alternate color, infrared constituents or other photometric parameters (see column 6, lines 4-10: the defective pixel have responsive characteristics for determining alternate image parameters including an alternate color of whiter or black).

In regard to claim 5, Kameyama, US 5,416,516, discloses the image sensor as in claim 1, wherein the substitutional pixels are fiducial elements which can be used for a mechanism for aligning the image sensor (see figure 2A: the vertical transfer regions can serve as reference points to aligns the sensor).

In regard to claim 6, Kameyama, US 5,416,516, discloses the image sensor as in claim 1, wherein it is inherent the substitutional pixels of the Kameyama reference provide a ground contact, since pixels provide a ground contact to operate.

In regard to claim 8, Kameyama, US 5,416,516, discloses a camera comprising:

(a) an image sensor (see figure 3, element 2) comprising:

(a1) a plurality of photosensitive sites (see figure 2A, photosensitive region) which convert incident light into a charge for

forming a bounded array of active imaging pixels (see column 2, lines 60-68); and

(a2) one or more substitutional pixels sites (see figure 2A, vertical transfer regions) arranged in predetermined locations and interspersed amongst the boundary of the array of active imaging pixels (see column 2, lines 60-68);

wherein the substitutional pixels are of a different design from the active imaging pixels which substitutional pixels provide data, information and/or function different from the active pixels for improving performance, operation, manufacture, and/or assembly of an imaging system (see column 2, lines 60-68: the vertical transfer registers are of a different design than the imaging pixels by being shielded and used to transfer image data to the horizontal register and the defective pixels are different in that they are completely white or black); and

(b) a mechanism for correcting an image created by the plurality of pixels by providing a signal level for an image site at a substitutional pixel location (see column 7, lines 17-33).

In regard to claim 10, Kameyama, US 5,416,516, discloses a camera comprising:

(a) an image sensor (see figure 3, element 2) comprising:

(a1) a plurality of photosensitive sites (see figure 2A, photosensitive region) which convert incident light into a charge for

forming a bounded array of active imaging pixels (see column 2, lines 60-68); and

(a2) one or more substitutional pixels sites (see figure 2A, vertical transfer regions) arranged in predetermined locations and interspersed amongst the boundary of the array of active imaging pixels (see column 2, lines 60-68);

wherein the substitutional pixels are of a different design from the active imaging pixels which substitutional pixels provide data, information and/or function different from the active pixels for improving performance, operation, manufacture, and/or assembly of an imaging system (see column 2, lines 60-68: the vertical transfer registers are of a different design than the imaging pixels by being shielded and used to transfer image data to the horizontal register and the defective pixels are different in that they are completely white or black).

In regard to claim 11, Kameyama, US 5,416,516, discloses the camera as in claim 10, wherein the substitutional pixels are amplifier circuits or buffer circuits for improving distribution of current or voltage across the array of pixels (see figure 2A and column 2, lines 60-68: vertical transfer region moves the image signals along the array of pixel).

In regard to claim 12, Kameyama, US 5,416,516, discloses the camera as in claim 10, wherein the substitutional pixels are amplifier circuits or buffer circuits for improving signal integrity within or across the array of pixels (see figure 1A and column 2, lines 60-

68: vertical transfer region improves the signal integrity by maintaining the signal values while transferring to the horizontal register).

In regard to claim 13, Kameyama, US 5,416,516, discloses the camera as in claim 10, wherein the substitutional pixels have response characteristics for determining alternate image parameters including alternate color, infrared constituents or other photometric parameters (see column 6, lines 4-10: the defective pixel have responsive characteristics for determining alternate image parameters including an alternate color of whiter or black).

In regard to claim 14, Kameyama, US 5,416,516, discloses the camera as in claim 10, wherein the substitutional pixels are fiducial elements which can be used for a mechanism for aligning the image sensor (see figure 2A: the vertical transfer regions can serve as reference points to aligns the sensor).

In regard to claim 15, Kameyama, US 5,416,516, discloses the camera as in claim 10, wherein it is inherent the substitutional pixels of the Kameyama reference provide a ground contact, since pixels provide a ground contact to operate.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 7 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kameyama, US 5,416,516, in view of Cham et al., GB 2,328,338.**

In regard to claim 7 and 16, Kameyama, US 5,416,516, discloses the image sensor and camera as in claims 1 and 10, respectively. The Kameyama reference does not disclose wherein the substitutional pixels provide dark reference levels for image processing.

Cham et al., GB 2,328,338, discloses an image sensor that performs dark current correction by using dark pixel cells 34 and 36 as reference pixels to confirm that the light sensitive pixels do in fact have a dark current dependence (see figure 3 and page 8, lines 11-22).

It would have been obvious to one of ordinary skill in the art at the time of invention to have been motivated to modify Kameyama, US 5,416,516, in view of Cham et al., GB 2,328,338, to have the substitutional pixels provide dark reference levels for image processing, in order to identify and correct defective pixel outputs, thus improving the quality of the image.

6. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kameyama, US 5,416,516, in view of Rambaldi et al., US 2004/0095488.

In regard to claim 9, Kameyama, US 5,416,516, discloses the image sensor as in claim 8. The Kameyama reference does not disclose wherein the mechanism for correcting and providing the signal level at the substitutional pixel location is done using nearest neighbor interpolation methods.

Rambaldi et al., US 2004/0095488, discloses a pixel correction system for image sensors wherein the mechanism for correcting and providing the signal level at the

Art Unit: 2622

defective pixel location is done using nearest neighbor interpolation methods (see para. 70 and 71).

It would have been obvious to one of ordinary skill in the art at the time of invention to have been motivated to modify Kameyama, US 5,416,516, in view of Rambaldi et al., US 2004/0095488, to have the mechanism for correcting and providing the signal level at the substitutional pixel location is done using nearest neighbor interpolation methods, in order to more accurately correct the defective pixel location thus making a higher quality image.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 6,970,193, discloses an image sensor with defective pixel correction using interpolation.

US 6,980,242, discloses an image sensor with vertical transfer section in the imaging area.

US 6,819,360, discloses an image sensor with two types of pixels.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gevell Selby whose telephone number is 571-272-7369. The examiner can normally be reached on 8:00 A.M. - 5:30 PM (every other Friday off).

Art Unit: 2622

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivek Srivastava can be reached on 571-272-7304. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

gvs



VIVEK SRIVASTAVA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600